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ABSTRACT

The purposes of the study were to determine whether phonic analysis training could be used to prepare children to be successful on the Auditory Analysis Test (AAT) of phonic skills and to then relate phonic knowledge to reading performance. Subjects were 40 first graders in suburban Pittsburgh who had attended kindergarten together. A group of 16 of the 40 children were judged not ready (NR) for reading. They were divided randomly into experimental (E) and control (C) groups and distributed equally in two classrooms with other children (R). Experimental group children received 37 auditory perception sessions for 15 to 20 minutes daily until all had mastered requisite skills. The AAT was administered to all 40 children, and comparisons were made between R and NR groups and between E anc C groups. Post-test results indicated significant differences between R and NR groups, between E and C groups, and between R and C groups, but not between R and E groups. Training apparently was effective in teaching phonic analysis skills necessary for successful performance on the AAT, and phonic skills were related to readiness. Tables and references are included. (MS)

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Phonic Analysis Training and Beginning Reading Skills

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Learning to read, regardless of instructional method, necessitates the establishment of visual-vocal equivalences. To progress beyond a very limited sight vocabulary level, the child must acquire the discrete equivalences represented by grapheme-phoneme interrelationships. He must discriminate and relate visual symbol to its phonetic counterpart and produce the latter in organized, connected sequences. The ability to analyze spoken words as a series of joined individual sounds is not ordinarily given consideration in the classroom, although it is implicit in the production of organized phonemic sequences.

This report presents the results of an instructional program designed to teach phonic analysis skills to first-grade children. A previous study (Rosner & Simon, 1970) reported an instrument--Auditory Analysis Test (AAT)--for assessing those skills. The AAT samples the child's ability to respond to such items as: "Say man" - "now say it without the /m/ sound"; "say belt" - "now say it without the /t/ sound"; "say stream" - "now say it without the /r/ sound." Significant correlations, ranging from .53 to .84, were shown between reading performance and AAT scores in a population of first- through sixth-grade children. Following the publication of that data, an earlier study (Bruce, 1964), concerned with remarkably similar behaviors, came to my attention. Bruce had confined his study to five- through seven-year-old children and his items were categorized

in a narrower range. He did not relate his subjects' responses to reading ability. His conclusion, essentially, was that the ability to analyze word sounds is a function of maturity and that a "mental age of 7+ is indicated as the level at which the skills become available in sufficient degree to permit some success with the task (p. 158)."

Two questions were posed in this study: (1) can the behaviors measured by the AAT be taught to first-grade children, and (2) what effect will such an instructional program have upon their reading performance?

METHOD

The children (N = 40) were enrolled in first grade at a suburban Pittsburgh elementary school. All had attended kindergarten in the same building. A group (N = 16) of them had not been given beginning reading instruction during their kindergarten year, having been judged as "not ready" by teacher's opinion, their Reading Readiness subtest scores, and their responses to a battery of perceptual skills tests. This group is referred to as non-readers (NR) in this paper. The remainder of the class had all entered into a program of reading instruction while in kindergarten and is referred to as readers (R) in this paper. Those children enrolled in first grade who had not also attended kindergarten in the same building are not considered here.

The 16 NR children were stratified into three subgroups according to I.Q. Through random selection, an experimental group (E) of eight children and a control group (C) of eight children were designated, each group demonstrating similar ranges of I.Q. Groups E and C were distributed equally between two classrooms.

Daily 15-20 minute auditory perception training sessions were provided to group E by a research assistant. The Auditory component of the LRDC Perceptual Skills Curriculum (Rosner, 1969) provided the training format. Training included such activities as: clapping and drawing "dashes" to represent the syllables ("parts") of a word; stating an omitted phoneme (e.g., "Say sad-ad" "what sound was missing"); substituting one phoneme for another (e.g., "Say sun" - "now put an /f/ sound where the /s/ sound was"). All activities were directed to the same general goal: that the child be capable of demonstrating auditory analytical skills by adding, omitting, substituting, and/or rearranging the phonemic elements of spoken words.

Training continued for 37 sessions, until all of group E demonstrated competency in the behavioral objective: "Given a stated CVC word that continues to have meaning without its initial phoneme, restate the word without its initial phoneme (e.g., "Say fat" - "now say it without the /f/ sound")." The AAT was then administered to the entire first grade and comparisons made between the R and NR groups, as well as between the E and C subgroups.

Training was continued on an altered schedule of two sessions per week. In six weeks all of group E achieved the behavioral objective: "Given a stated one syllable word that commences with a two consonant blend and continues to have meaning without the initial consonant sound, restate the word without its initial consonant sound (e.g., "Say star" -

"now say it without the /s/ sound)." At that time, after 70 school days, groups E and C were given a reading test. The test, constructed for other purposes by the Reading and Language Project staff of this Center, provides a list of single words to be read aloud. Thirty-five (unit) words are taken from the instructional material to which the children had already been exposed. Twenty-five transfer words are also included. These, though not used in the instructional material, are constructed of graphemes that have been taught. Raw score--number of words read correctly--was recorded.

RESULTS

Table 1 shows the Measure #1 and Measure #2 mean AAT scores of the R, E, and C groups, as well as their mean I.Q. and C.A. upon entering first grade.

Table 1

Mean Age, I.Q., and Measure #1 and #2 AAT Scores for Groups R, E, and C

Group	N	CA*	I.Q.**	AAT-Measure #1	AAT-Measure #2
R	24	73.3 (3.3)	119.7 (13.7)	5.63 (5.2)	18.08 (9.6)
E	8	73.0 (2.5)	105.4 (8.99)	2.25 (2.3)	12.0 (5.3)
C	8	71.6 (1.9)	106.9 (10.1)	2.13 (2.5)	5.0 (3.2)

* As of entry into Grade 1

** Otis-Lennon Mental Ability Test

( ) = Standard Deviation

Table 2 compares the mean AAT scores between the three groups, before and after training. At Measure #1, no significant differences were apparent between the mean scores of E and C ($t = .104$; $df = 14$). An analysis of covariance after Measure #2, treating the Measure #1 scores of E and C as covariates, indicates significant post-test differences between those two groups ($F = 14.33$; $df = 1/13$; $p < .005$).

Table 2

Mean AAT Scores for Groups R, E, and C
at Measures #1 and #2

Group	Measure #1 AAT	Measure #2 AAT
R and C	$t = 1.81$ $p < .05$	$t = 3.75$ $p < .0005$
R and E	$t = 1.76$ $p < .05$	$t = 1.69$ $p < .10$
E and C	$t = 0.10$ $p <$ NS	*$F = 14.33$ $p < .005$

* ANCOVA

Measure #2 AAT scores were also compared to those of group R. Whereas, initially, the difference between either of the NR (E or C) subgroups and the R group was significant ($p < .01$), the scores of E at the post-training measure were not significantly different than R ($p < .10$) while the scores of C were indeed different than R ($p < .0005$).

The results of the reading tests given to groups E and C are shown in Table 3. Group E scores were significantly higher than C in both unit words ($t = 3.66$; $df = 14$; $p < .005$) and transfer words ($t = 4.37$; $df = 14$; $p < .0005$). E scored slightly more than 50 percent higher than C on unit words, and more than 75 percent higher on transfer words. Pretest scores are not provided in that none of the children in C or E could read at the beginning of first grade.

Table 3

Mean Reading Test Scores for Groups E and C

	Total Words	Score Group E	Score Group C	t	p
Unit Words	35	31.0 (2.3)	20.6 (7.7)	3.66	<.005
Transfer Words	25	20.5 (2.6)	12.0 (4.8)	4.37	<.0005

( ) = Standard Deviation

DISCUSSION AND CONCLUSIONS

Groups E and C no longer manifest the homogeneity measured at the beginning of first grade. Training appears to be the variable that enabled group E to score appreciably higher than group C in the reading and auditory perceptual tests. Both groups entered a reading program at the start of first grade. Both groups were divided between two teachers. Both groups represented comparable I.Q. distributions as well as entering

"readiness" and AAT scores. The only apparent difference in their educational management was the 49 group training sessions provided group E.

Group R, having entered into a reading instruction program while in kindergarten, remains ahead of group E in reading. Their phonic analysis skills, however, are now more nearly alike; this despite the fact that group R's phonic analysis skills also improved, without benefit of special training, during those 70 school days. The obvious inference is that learning to read probably offers an effective training program for such skills by providing a visual mediator for the analysis of sounds. Unfortunately, some children seem to lack the basic entering behaviors or aptitudes assumed, or not even recognized, by the instructional program and, hence, encounter difficulty in getting a substantial start in reading. Thus we note that group C's phonic analysis skills and reading potential, once the equivalent of E's, are now appreciably less than either of the two other groups.

Given these data, acknowledging that projections should be formulated very tentatively from a single study involving a small N, it seems justifiable to suggest that teaching basic phonic analysis skills to those children who demonstrate inadequacy upon entering a beginning reading program is desirable, if not, indeed, essential. Although reading undoubtedly is dependent on the presence of many skills, the ability to analyze verbal acoustic information seems critical to competency at the decoding level. The extent to which it need be taught remains to be determined.

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